## Section 2 - Major Components of the Strategy

This section defines the key components of the Strategy, and explains the Strategy document structure which is organized on a component basis, but briefly summarized here.

### 2.1 The NCore Monitoring Network [Section 4]

The new national network, NCore, basically is an extension of the current air monitoring networks, but with an opportunity to address new directions in air monitoring, and to begin filling measurement and technological gaps that have accumulated over the years. Emphasis is placed on a backbone of multi-pollutant sites, continuous monitoring methods, and important pollutants over and above the criteria pollutants, for example, ammonia, and reactive nitrogen compounds (NOy). When completed, NCore will meet a number of important needs: improved data flow and timely reporting to the public; NAAQS compliance determinations; supporting development of emissions strategies; assuring accountability for control programs; and supporting scientific and health-based studies.

Structurally, in place of the current National Air Monitoring Station (NAMS)/State and Local Air Monitoring Station (SLAMS) programs, NCore will establish three levels of monitoring sites:

- **Level 1** – a more research-oriented platform accommodating the greatest level of instrumentation with specific targeted objectives, reasonably analogous to the current PM Supersite program;

- **Level 2** – the backbone network of approximately 75 nationwide multi-pollutant sites, encompassing both urban (about 55 sites) and rural (about 20 sites) locations;

- **Level 3** – additional sites, reasonably analogous to today's SLAMS sites, focusing primarily on those pollutants of greatest concern.

It is estimated that over 1,000 Level 3 sites will be part of NCore. While each of the three levels have specific objectives, it should be recognized that there is more or less a continuum among these. Level 2 sites, for example, may meet the minimum level of multi-pollutant measurements, but may also be augmented as necessary with other measurements so that the most heavily equipped sites are approaching Level 1 in scope. Similarly, Level 3 sites may be single pollutant sites, but as necessary, may be augmented by other monitors so that it approaches Level 2 site criteria. It is envisioned that a number of Level 3 sites may be close to requirements for a minimum Level 2 site. These variations will be dictated by the needs of the particular area or agency responsible for air monitoring programs.

In moving toward the NCore design, it is expected that leveraging of existing networks can be accomplished where most feasible. With regard more specifically to the Level 2 sites, it

is appropriate, for example, to include air toxic trend site monitoring; $PM_{2.5}$ speciation monitoring; and PAMS monitoring where such linkages make the most sense and meet the objectives of each program. By combining these monitoring programs at a single location, we maximize the information about the multi-pollutant nature of the air to which the public is exposed. This greatly enhances the foundation for future health studies and NAAQS revisions. This leveraging of monitoring resources could also be effective at Level 3 sites, if such leveraging is not appropriate at a Level 2 site.

### 2.2 Network Assessments [Section 5]

As part of the Strategy, a holistic review of our air monitoring networks is warranted. State and local agencies typically conduct an annual network review, and recommend changes to their networks. As a result, the networks are ever-changing to meet more current needs. However, there has not been a concerted effort to take a critical look at our monitoring sites and determine if there are redundancies and inefficiencies in current designs. Furthermore, our networks have traditionally been laid out in overlapping fashion, i.e., an ozone network, a carbon monoxide network, and a $PM_{10}$ and $PM_{2.5}$ network, etc.

In 2000, EPA commissioned a national assessment of our monitoring networks, with considerations for population, pollutant concentrations, pollutant deviations from the NAAQS, pollutant estimation uncertainty, and the area represented by each site. Based on this national assessment, it was determined that substantial reductions in monitors could be made for pollutants which are no longer violating national air standards on a widespread basis, namely lead, sulfur dioxide, nitrogen dioxide, and $PM_{10}$, with the caveat that the measurement of some pollutants, such as sulfur dioxide, may be useful as source tracers even though ambient levels may be low. Even for those pollutants of greatest national concern, ozone and $PM_{2.5}$, sufficient redundancy was found to suggest reductions of 5 to 20% of our monitors without seriously compromising the information from our monitors.

With this as a backdrop, each of the 10 EPA Regional Offices was charged with conducting regional assessments of the air monitoring networks. This process began in early 2001 and is expected to be completed in 2004. However, the procedures by which regional assessments were conducted were not standardized. It is recognized that differences in air quality, population, monitoring density, among others, necessitate varying approaches in evaluating networks. However, without some generalized guidelines, the potential for regional inconsistencies exists. A Subcommittee of CASAC (Clean Air Science Advisory Committee) met in July 2003 and recommended that regional assessment guidelines be developed, and in response, definitive guidelines will be in place for subsequent regional assessments, targeted to be done every five years.

The network assessment process, too, is a collaborative effort between EPA and the SLTs. While some factors for network changes may be developed from statistical evaluations, there are also local considerations, e.g., political, which have bearing on local decisions to change monitors. Ultimately, the combined efforts among national, regional, and local

perspectives and needs will result in an optimized realignment of air monitoring networks which will be more efficient, yet more responsive to the many objectives of the Strategy.

### 2.3 Technology [Section 6]

The explosion of computer and communications technologies over the past 15 years can be extended to air quality monitoring as well. The potential for improving monitoring methods; monitoring support capabilities such as computer controlled instrument calibrations and quality assurance functions; and information transfer (i.e., getting data quickly to the public) is greater now that at any time in the past. Yet, some components of our monitoring networks are still functioning under more manual and time consuming regimes.

EPA, working with its State and local partners, has established a Technology Working Group to examine the prospects for incorporating new technologies and making recommendations as to the best ways to embrace these. The focus is in three key areas:

- moving toward continuous PM monitors in place of the more cumbersome, labor intensive filter-based methods

- encouraging the utilization of new technologies to measure a more robust suite of pollutants, such as reactive nitrogen compounds (NOy)

- fostering the utilization of advanced information transfer technologies (e.g., replacing antiquated phone communication telemetry systems with internet-based, radio and satellite communications media).

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There are several recognized impediments in moving forward in these areas:

- regulations which support the “old” way of doing things need to be revised to reflect the current technological environment;

- special funding needs to be identified to invest in the equipment capital costs to replace older monitors and data transfer systems

- investments in staff training are needed to assure Agency staff will be able to operate and maintain the new equipment. In addressing these impediments, regulation changes are in progress as part of this Strategy, and funding/training issues will be addressed as part of the implementation plan, of which a framework is presented in Section 11 of this document.

### 2.4 Quality Assurance (QA) [Section 7]

Quality assurance is a major component of the air monitoring programs and it is intended to assure that only high quality data are produced, and therefore the investments in air

monitoring produce the most beneficial results. As the air monitoring networks are reevaluated under the Strategy, so too, the quality assurance programs need to be reassessed. To accomplish this task, a Quality Assurance Work Group was established between EPA and State and local agencies. The objective was to develop a quality system, its elements and activities, for an ambient air monitoring program. A quality system can be defined as a structured and documented system describing the policies, objectives, principles, organizational authority, responsibilities, and implementation plan of an organization for assuring quality in its work, processes, products, and services. This provides a framework for work performed by an organization and carrying out its required quality assurance and quality control. This process is essential to assure confidence in the data collected.

The Work Group developed several key recommendations:

- move toward a performance-based measurement process with specified data quality objectives;
- minimize start-up problems with a phased implementation approach;
- provide a reasonable estimate of the costs associated with QA programs;
- develop certification and/or accreditation programs;
- develop generic quality assurance program plans (QAPPs);
- accelerate data review and certification programs for quicker data access into the national air quality data system (AQS);
- eliminate redundancies in performance evaluation programs;
- develop appropriate data quality assessment tools (e.g., software); and
- streamline regulations, and more specifically identify those actions which should be mandated through regulation and which should be recommended through guidance.

It is expected that both regulation changes and necessary guidance will be developed as separate actions to accommodate the implementation of the Strategy.

Additional actions which will be necessary include:

- the development of standard operating procedures (SOPs) to accompany the employment of new instrumentation; and

- appropriate requirements for the infrastructure necessary to accommodate NCore sites (e.g., so that sufficient space, power, access, etc, are included in site designs.)

These elements will need to be developed as part of the implementation plan.

### 2.5 Monitoring Regulations [Section 8]

Monitoring regulation revisions are needed to remove potential obstacles in implementing the Strategy and to foster technically creative instrument approaches and measurement systems. The monitoring regulations remain the most authoritative guide for air agencies and will ultimately serve as the principal communications tool to convey products of the Strategy, ultimately establishing NCore as the umbrella for federally mandated air monitoring. The specific topics targeted for regulation changes are:

- insertion of NCore as the replacement for the traditional NAMS/SLAMS monitoring components (40 CFR Part 58)

- establishment of new minimum requirements in criteria pollutant monitoring to enable action on results from the network assessments and the continuous PM monitoring implementation plan (40 CFR Part 58)

- introduction of new provisions for $PM_{2.5}$ monitoring, including regional equivalency (40 CFR Parts 53 and 58), and broader correlating acceptable continuous (CAC) monitoring applications (40 CFR Part 58)

- revised PAMS monitoring requirements emphasizing accountability as a primary objective and a reduction in non-type-2 sites (40 CFR Part 58)

- restructuring of quality assurance (40 CFR Part 58)

- revised national equivalency specification for $PM_{2.5}$ and expected $PM_{coarse}$ that will be based on updated data quality objectives and structured to accommodate continuous technologies (40 CFR Part 53)

The specifics of these changes cannot be included in this document, as the regulatory process will govern these details. It is expected that a notice of proposed regulation amendments will be issued by EPA in 2004, with final changes to become effective in 2005.

These five components constitute the major implementation and action steps that in turn effect network change as conceived in Figure 2-1.

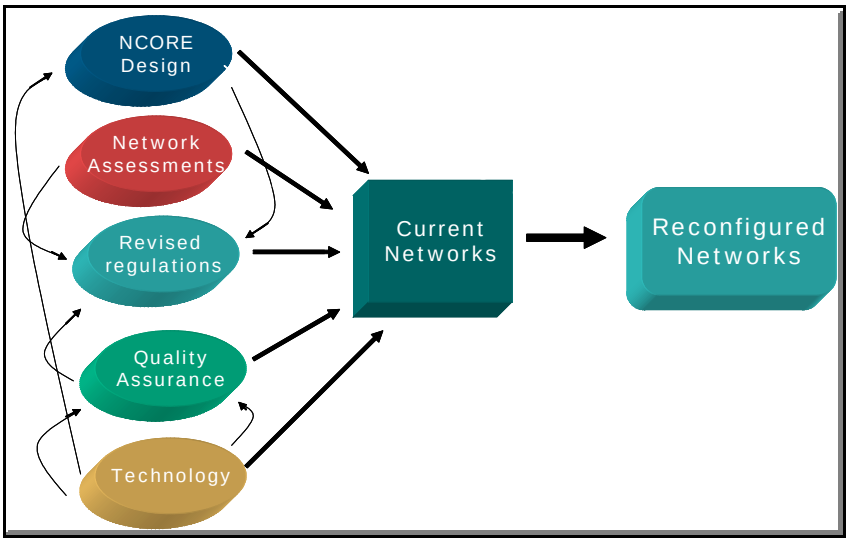


**Figure 2-1** . Information flow across monitoring strategy components.

In addition to these major components which impact overall network design, the Strategy document includes the following sections which support implementation.

### 2.6. Communications and Outreach [Section 9]

The success of implementing a new approach in air monitoring requires a comprehensive public outreach and communications process. Without proper public interaction and dialog, there could be public misconceptions about the overall benefits of the Strategy. One of the key elements for public outreach is a publicly-oriented brochure. Working with State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) and a public relations contractor, EPA has put together a tri-panel brochure which can either be distributed (in limited quantities) to SLTs, or can be provided electronically to agencies so that each agency can imprint local contact information for the public. It is expected, too, that the SLTs will engage the public as appropriate, for example, through public meetings, workshops, use of websites, etc, so as to keep the public apprised of network changes and to solicit public input as well.

There are other communications products which are primarily intended for the SLT staff. These include a fact sheet explaining the technical need for a revised air monitoring strategy; and a quarterly newsletter to provide updates on the status of the Strategy as it moves from the development to the implementation phases. These two products are available on EPA's AMTIC website, www.epa.gov/ttn/amtic .